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ABSTRACT

The purpose of this document is to describe two process-oriented classroom observation scales and to report a research study which offers further support for the validity of these instruments. The two observation scales, developed by Harvey, et al., are (1) Teaching Rating Scale, devised specifically as a measure of classroom atmosphere, and (2) Student Rating Scale, constructed to assess certain effects of different teacher behaviors and classroom climates upon the students. The instrument used as the criterion against which the replicability of the apparent validity of both scales were tested was the "This I Believe" (TIB) Test, a measure of concreteness-abstractness which enables respondents to be classified into one of four principal belief systems (ranging from the most concrete mode of construing the world to the most abstract). The research study involved preliminary administration of the TIB and repeated usage of both observation scales as part of an evaluation of a teacher re-training program in a large suburban school district. Results of the study reconfirm the earlier findings of Harvey, et al., that the concreteness-abstractness of teachers' beliefs affects their behavior in the classroom and that this differential behavior in turn influences the performance of their students. Procedures and findings are presented in both tabular and discussion form, along with recommendations for appropriate utilization and/or adaptations of the two scales. (Author/JES)

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Observation Scales of Classroom Atmosphere and Student Behavior: A Replication and Refinement[1]

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The accelerating concern of educators with process variables in education has far outdistanced the availability of instruments appropriate to assessing these variables. Thus, on one hand, while increasing effort is being expended toward achieving process related outcomes, they continue to be evaluated largely by traditional content measures that were designed to tap something entirely different. Most efforts at measuring process effects consequently have yielded negative results, a condition that bulwarks traditionalism in education and one that will necessarily continue until instruments built specifically to measure process variables are perfected. The purpose of this report is to outline one vein of our effort at overcoming this problem through describing two classroom observation scales, one of the teacher and the other of the students, which appear to provide valid indices of certain process factors.

Two considerations guided the development of these scales. First was the assumption that while concentration on discrete and literal descriptions of behavior might increase the inter-observer reliabilities, validity of observations would be enhanced by the use of rating scales that require the observers to make certain inferences about the meaning of the behavior they are attempting to chronicle. While recognizing that there are observation scales which vary in the specificity of the observer responses, from simple frequencies per unit of time to interpretive inferences (e.g., Brown, Mendenhall & Beaver, 1968; Flanders, 1960, 1963; Gage, 1967; Medley & Hill, 1969; Medley & Mitzel, 1963; Ryans, 1960),

it was our intention to capitalize on the observer's ability to draw appropriate inferences about the meaning of an otherwise meaningless response from the context in which the behavior occurs.

The second assumption, also a derivative of our belief in the superiority of inference over literally descriptive recording of behavior, was the intent to derive the categories of the rating scales from a theoretically coherent rationale. This, together with the context of the total classroom setting, should provide a framework for both reliable and valid ratings of classroom behavior.

The general theoretical bases guiding the construction of the scales were those outlined by Harvey, Hunt and Schroder (1961) in their treatment of the effects of concreteness-abstractness of persons' beliefs. Harvey (1967, 1969) has recently summarized the more essential differences he and his co-workers have found between representatives of the more concrete and the more abstract belief systems. In comparison to the more abstractly functioning individual, persons with more concrete beliefs have been found to manifest:

1. Simpler cognitive structures; (2) a tendency toward more extreme and polarized judgments and evaluations; (3) a greater reliance upon status and power, as opposed to information and expertise, in judgments and actions; (4) a greater need for cognitive consistency and greater negative arousal from the experience of inconsistency; (6) a greater inability to change set; (7) a greater insensitivity to subtle cues in the environment; (8) a poorer capacity to "act as if,"

and to role play; (9) holding opinions with greater strength and certainty; (10) fewer alternatives to a complex problem; (11) a greater readiness to form and generalize impressions of other people; and (12) less innovation and creativity.

These and other closely related differences were expected to exist between the behavior of the concrete and abstract teachers in the classroom setting. Therefore the rating scales were made to include categories that would permit testing a wide variety of anticipated differences, such as that concrete teachers would create classroom climates that were more highly structured, more controlled, more rule and authority oriented, more punitive, less diverse in goal relevant activities, less fostering of student independence and creativity, less productive of the learning of principles and concepts, more conducive to passive hostility of the students toward their teachers and aggression toward their peers, and more conducive to the students seeking guidance and approval from the teachers.

Both of the rating scales to be described in this report were developed for and had been used in previous research. The Teacher Rating Scale, which was devised specifically as a measure of classroom atmosphere, had been used in two previous studies (Harvey, White, Prather, Alter & Hoffmeister, 1966; Harvey, Prather, White & Hoffmeister, 1968). The Student Rating Scale, which was constructed to assess certain effects of different teacher behaviors and classroom climates upon the students, had been used in only one previous

study (Harvey, et al., 1968). The present research aimed at testing further the apparent validity of these scales through examining the replicability of the results yielded previously by them.

In the first usage of the Teacher Rating Scale (Harvey et al., 1966), kindergarten teachers classified as being more concrete in their beliefs were found to differ from their more abstract counterparts in the kinds of classroom environments they created on all 23 dimensions of the scale, and significantly so on 14. For example, representatives of the most abstract belief system, System 4, manifested greater perceptiveness of the children's wishes and needs, were more flexible in meeting the needs of children, were more encouraging of individual responsibility and creativity, and were less determining of classroom and playground procedures. A cluster analysis (Tryon & Bailey, 1966) of the 14 dimensions on which concrete and abstract teachers differed significantly yielded two major clusters, Dictatorialness and Task Orientation. In line with the results based on single items, System 4 teachers were significantly more task oriented and less dictatorial than the more concrete System 1 teachers.

The follow up study, in which the Teacher Rating Scale was used for the second time and the Student Rating Scale for the first (Harvey et al., 1968), produced highly similar results. A cluster analysis of the Teacher Rating Scale yielded the two factors originally obtained, Dictatorialness and Task Orientation (re-named Fostering Exploration), plus a third, minor, factor termed Punitiveness. Again, the abstract

teachers were more task oriented, or more fostering of exploration, less dictatorial and less punitive.

Differences between concrete and abstract teachers were found to produce differences between their students (Harvey et al., 1968). Students of concrete teachers differed from students of abstract teachers on all seven of the factors derived from a cluster analysis of the 31-item Student Rating Scale. The former were rated significantly lower on the factors of Involvement, Activity Level and Achievement Level; significantly higher on Concreteness of Response; higher, but not significantly higher on Nurturance Seeking; and lower, although not significantly lower, on Helpfulness and Cooperation.

The present study involved repeated usage of both the Teacher and Student Rating Scales as part of an evaluation of a teacher retraining program in a large suburban school district.[2] Replication of both the reliability and validity of these scales would render them useful instruments of educational research and training, especially for assessment of some of the traditionally elusive process variables.

METHOD

Subjects

Twenty-four elementary teachers from a large suburban district participated in the study as part of a six-weeks voluntary summer retraining program, for which they received either in-service or

college credit. The mean age for the group of four men and twenty women was 31 years. The teachers were fairly evenly distributed across the grades from kindergarten through sixth grade.

Instruments

Classroom Observation Rating Scales. The present study used, in slightly modified form, the Teacher and Student Rating Scales devised by Harvey et al., (1966: 1968) to which reference has already been made. The Teacher Rating Scale consisted of 23 items and the Student Rating Scale was composed of 31 items. The revisions were the result not only of previous findings with kindergartners and first graders but also of pretests with upper elementary grades which made it apparent that some of the items employed in the original versions of the scales were not appropriate for the upper elementary grades.

To allow for finer judgmental discrimination, the six categories used in the earlier research were expanded to ten, from +5 for "far above average," through -5 for "far below average," the notion of "average" being the product of a lengthy training experience involving all observers.

Measure of Concreteness-Abstractness. Teachers' concreteness-abstractness served as the criterion against which the replicability of the apparent validity of both scales was tested. The classroom atmospheres created by concrete and abstract teachers were expected to differ in ways established earlier,as was the classroom behavior of their students. Concreteness-abstractness of the teachers' beliefs

was assessed by the "This I Believe" (TIB) Test, an instrument devised specifically to measure this general cognitive property (e.g., Harvey, 1964; 1965; 1966; Harvey et al., 1966; 1968; Ware & Harvey, 1967; White & Harvey, 1965).

The TIB requires the subject (S) to indicate his beliefs about a number of socially and personally relevant concept referents by completing in two or three sentences the phrase "This I believe about_____." the blank being replaced successively by one of the referents. In the present study these referents were: "The American way of life," "compromise," "education," "religion," "morality," "friendship," "marriage," "foreign aid," and "immortality."

From the relativism, tautologicalness, novelty and richness of the completions, together with criteria implied in differences noted earlier between concrete and abstract functioning, respondents may be classified into one of the four principal belief systems posited by Harvey et al., (1961) or into some admixture of two or more systems.

More specifically, Ss are classified as representing predominantly System 1, the most concrete mode of construing the world, if their completions denote such attributes as high absolutism, high tautologicalness, high frequency of platitudes and normative statements, high ethnocentrism, high religiosity, assertion of the superiority of American morality and expression of highly positive attitudes toward most of the institutional referents.

Subjects are categorized as representing System 2, the next to the most concrete level of functioning, if, in addition to being

highly evaluative and absolute, they express strong negative attitudes toward such referents as marriage, religion, the American way of life and others toward which System 1 representatives manifest highly positive feelings.

Responses to the TIB are scored as representing System 3 functioning, the next to the highest level of abstractness depicted by Harvey et al., (1961), if they indicate more relativism and less evaluativeness than Systems 1 and 2 and at the same time express strongly positive beliefs about friendship, people, and interpersonal relations.

System 4 functioning, the highest of the four levels of abstractness, is indicated by TIB responses that imply a high degree of novelty and appropriateness, independence without negativism, high relativism and contingency of thought, and the general usage of multidimensional rather than unidimensional integrative schemata.

All TIB responses were scored independently by three trained judges. Of the 24 Ss, 12 were classified by the judges as clear representatives of System 1, 10 as representing admixtures of Systems 1 and 3 or Systems 3 and 1, and only two as admixtures of Systems 3 and 4 or 4 and 3. Thus there was no clear representative of System 4, the most abstract of the four belief systems. In this study System 1 teachers will be treated as the concrete group, Systems 3 and 4 admixtures as the abstract group and the admixture of Systems 1 and 3 as the admixture group.

Incidentally, the small number of abstract teachers appears to be typical. In a recently analyzed sample of 1088 elementary teachers tested in a large school district, only 6% were found to be clearly open individuals (Systems 3 or 4, or admixtures of Systems 3 and 4).

Training of Observers

Much as they had been in the earlier two studies, judges were trained extensively in the definitions of the rating dimensions and rating categories, including the conception of "average" in relation to which the ratings were made. After each of the several common observations during this period, the raters discussed their ratings the objective being to increase the reliability of the ratings through improvement of observation techniques and clarification and standardization of the meaning and usage of the rating categories. As part of the training in use of the Teacher Rating Scale, observers were cautioned to concentrate on the process of teaching instead of the content. In training for use of the Student Rating Scale, observers focussed on the class as a whole in order to avoid giving inordinate weight to the behavior of one child or a few children.

Inter-judge reliability was assessed at the end of each of the four training and refreshing periods. The weighted mean correlation between every pair of the six judges for the Teacher and Student Rating Scales combined was .84, indicating clearly that each judge was using the scales in much the same way as the other judges. Inter-judge reliabilities taken periodically during each of the four actual rating periods were similarly high.

Procedure

Each teacher and her class were observed and rated on four occasions. Ratings at Times 1 and 4 (before and after the teacher retraining program) were made by pairs of independent judges while observations at Times 2 and 3 (during the retraining program itself) were each made by a single judge. The repeatedly high interjudge reliabilities meant that differences due to the number of judges were minimal.

Each classroom, including the teacher and her students, was observed for approximately one hour.

No observer rated the same teacher more than once and no observer or pair of observers rated more than three teachers in a single day. The order in which teachers were observed was varied as much as possible for each observer so that observers would not be exposed to a long series of teachers of the same belief system. In the case of paired observations, different observers were paired daily. Special care was exercised to prevent any observers from having any information as to the TIB classifications of the teachers prior to the observations.

RESULTS

Reliability of Scale Factors

Teacher Rating Scale. Two preliminary cluster analyses (Tryon & Bailey, 1966) were done on the ratings at Time 1 and Time 4 because both, like the previous studies, were derived from paired observers. The results of the two analyses were very similar, each producing two factors, Fostering Exploration and Dictatorialness, with factor loadings ranging from .67 to .95. The similarity of these two analyses to those of the earlier two studies (Harvey et al., 1966; 1968), together with the high interjudge reliabilities in the ratings at all four observations, led to a decision to do a combined factor analysis on data gathered during the four observations in the present study.

Table 1, which compares the results of this analysis with previous results, shows that the two major factors extracted in each of the previous studies, Fostering Exploration (named Task Orientation in 1966 and Resourcefulness in 1968), and Dictatorialness were again obtained from the combined observations in this study. As may be

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Table 1 about here

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noted from Table 1, 21 of the 23 items in the Teacher Rating Scales were included in these two factors, none with a loading below .70. Punitiveness, which appeared as a three-item factor in the 1968 study,

did not replicate in the present study. Its original three items have been incorporated in the present two major factors: Warmth (-.78) and punitiveness (.76) into Dictatorialness; and perceptiveness (.82) into Fostering Exploration. The 21 items included in the two factors of the present study constitute the version of the Teacher Rating Scale being used in our current research.

Student Rating Scale. As in the case of the Teacher Rating Scale, separate cluster analyses were performed on ratings obtained at Time 1 and Time 4. Each analysis produced four factors which were almost identical: Self-expression, Task Attentiveness, Creativity, and Respect for Peers. This similarity led to a single cluster analysis of ratings obtained during all four observations.

The factors derived from the combined cluster analysis of the present study, the factors derived from the 1968 study, and the items comprising both are presented in Table 2.

Table 2 about here

The four factors yielded in this study are highly similar to the four obtained in the 1968 research. The present factor of Creativity embodies two of the 1968 clusters, Achievement and Concreteness of Response (the latter, of course, being negatively loaded). The other three clusters from the present study, Self-expression, Task Attentiveness, and Respect for Peers, bear a high

similarity to the factors labeled in 1968 as Student Involvement, Cooperativeness, and Helpfulness, respectively. Neither of the two-item factors obtained in 1968, Nurturance Seeking and Activity Level, appeared in the present study. Based on the present results, the Student Rating Scale has been reduced from its original 31 items to the 26 items contained in the four clusters in Table 2. It may be noted that all of these items attained a factor loading of at least .62.

Validity of the Scale Factors

Both of the previous studies (Harvey et al., 1966; 1968) found concrete and abstract teachers to differ on the Teacher Rating Scale in predicted ways. The 1968 study found that students of these teachers also differed in anticipated ways on the Student Rating Scale. As a further test of the validity of these scales, concrete and abstract teachers, as well as their students were rated in the present study.

TIB Classification and Teacher Ratings. Of the four sets of ratings made in this study, only those based on Time 1 (before the retraining program) may be compared appropriately to the results of the previous studies. Table 3 presents the mean ratings of concrete, abstract, and admixture teachers at Time 1 on the factors of

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Table 3 about here

Dictatorialness and Fostering Exploration. As previously, abstract teachers were rated significantly higher on Fostering Exploration ($t = 3.12$, $df = 11$, $p < .005$) and lower, but not significantly lower, on Dictatorialness than their concrete counterparts. On the basis of both theory and previous findings, one would predict that the more abstract the teacher the higher the factor score on Fostering Exploration and the lower the factor score on Dictatorialness. Page's L test (Page, 1963) based on the two factors and three belief groupings, did show the differences among the groups to be significant ($L = 28$, $p < .05$).

TIB Classification and Student Performance. Table 4 presents the mean ratings of the students of abstract, concrete, and admixture teachers at Time 1 on the four factors derived from the Student Rating Scale. As in the earlier study (Harvey et al., 1968), students of abstract teachers were rated higher than students of concrete teachers

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Table 4 about here

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on all four student factors, i. e., on Self-expression, Task Attentiveness, Creativity, and Respect for Peers. While only the difference on Creativity yielded a significant t ($t = 2.16$, $df = 12$, $p < .05$), Page's L test showed the trend of the factor differences among the groups to be significant ($L = 56$, $p < .05$).

DISCUSSION

The present results reconfirm the earlier findings of Harvey et al., (1966, 1968), that the concreteness-abstractness of teachers' beliefs affects their behavior in the classroom and that this differential behavior, in turn, influences the performance of the students. This replication of both the validity and reliability of the Teacher and Student Rating Scales indicates quite clearly that these two instruments may be used effectively to assess certain kinds of teacher behavior or classroom climates as well as the effects of these behaviors and atmospheres upon the students' performance.

The rating scales were meant to focus on the process of teaching and learning and not on their specific contents. Thus the scales should be usable irrespective of the teaching approach (i.e., inquiry, formal lecture, etc.) and the nature of the subject. While teaching approach and subject matter may be important determinants of classroom atmosphere and student performance, such teacher behaviors as those included in the factors of Dictatorialness and Fostering Exploration probably influence any method and any subject of teaching.

With regard to future use of the scales, it would appear that the items derived from the cluster analyses of the combined ratings from all four observations would be the most appropriate. These analyses yielded 21 items in the two Teacher Rating Scale factors (Table 1) and 26 items in the four Student Rating Scale clusters (Table 2)[3].

In their present forms, these scales are more applicable to the elementary than the higher grade levels and to the condition in which a classroom is more under the control of a single teacher than a team of teachers. However, by using behavioral criteria which are deducible from the characteristics of the more concrete and the more abstract belief systems, it should be relatively simple to adapt the present scales for use in higher grades and conditions of team or other styles of teaching.

While both scales appear to be useful research and training instruments, their users should be on guard against a possible contamination between them which arises because ratings of the teacher are not independent of judgments about the behavior of her students and vice versa. The possibility of such contamination arises particularly when the same observer rates both the teacher and her students, a practice we have chosen to follow by having the observer concentrate on and rate the behavior of the students as a class before focusing on the teacher. As we pointed out previously (Harvey, et al., 1968), this practice was based on the results of extensive pretesting which indicated that the relationship between student and teacher ratings made in this way by the same observer was no higher than that between separate ratings of the teacher and her students made by different judges. In fact, the pretest evidence indicated that while the use of a single observer for both the teacher and her students probably produced some contamination, at the same time

it produced seemingly more valid ratings than those yielded by the practice of one judge observing the teacher while another judge observed her students. Faced with this cost-credit situation, we elected to maximize validity at the cost of possible contamination. If the potential of the scales is to be maximized, however, ways of using them need to be developed which enhance their validity at the same time that built-in relationships between them are minimized. Expert video-taping of teacher and student behavior separately might be one means to this end.

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Table 1

Present Factors from the Teacher Rating Scale

Factors and Items	Loading
Cluster I - Fosters Exploration	
Ingenuity	.94
Task effectiveness	.90
Utilization of standard resources	.89
Multiplicity of themes or approaches to problems	.86
Teaching concepts	.85
Encourage creativity and diversity	.83
Involvement	.83
Perceptiveness	.82
Encourage individual responsibility	.79
Enlistment of child participation	.78
Enjoyment	.78
Attention to the individual	.73
Cluster II - Dictatorialness	
Personal need for structure	.91
Rule orientation	.89
Allows free expression of feelings	-.86
Flexibility	-.85
Warmth	-.78
Dictation of procedural detail	.78
Punitiveness	.76
Fairness	-.75
Nonfunctional explanation of rules	.70

Note--. Detailed comparisons between items in the present scale and earlier versions are available from the American Documentation Institute.

Table 2

Present Factors from the Student Rating Scale

Factors and Items	Loading
Cluster I - Self-expression	
Free expression of feeling	.82
Fear attentiveness (insecurity)	-.82
Independence	.74
Mechanistic adherance to rules	-.72
Expression of preference in classroom activity	.71
Cluster II - Task Attentiveness	
Task attentiveness	.91
Cooperativeness with teacher	.88
Adherance to spirit of rules	.88
Child sustained activity	.85
Voluntary participation in classroom activity	.85
Overall adherance to teacher's rules	.83
Amount of relevant activity	.81
Enthusiasm	.79
Passive hostility toward teacher	-.77
Information seeking	.75
Diversity of goal relevant activity	.65
Amount of irrelevant activity	-.62
Cluster III - Creativity	
Integration of facts	.89
Roteness-discreteness of answers	-.89
Reliance upon unintegrated facts	-.81
Novelty of response-answer	.78
Appropriateness of response-answer	.72

Table 2 (continued)

Factors and Items	Loading
Cluster IV - Respect for Peers	
Cooperativeness with classmates	.87
Consideration toward classmates	.82
Reciprocal affection	.80
Amount of problem-oriented interaction	.75

Table 3

Mean Rating of Concrete, Admixture and Abstract Teachers on the Two Factors Derived from the Teacher Rating Scale at Time 1

Group	Dictatorialness		Fosters Exploration	
	Mean	SD	Mean	SD
Concrete	5.84	2.22	5.79	1.97
Admixture	4.27	1.80	6.82	1.90
Abstract	3.91	.22	7.56	.03

Table 4

Mean Rating of the Students of Concrete, Admixture and Abstract Teachers on the Four Factors Derived from the Student Rating Scale at Time 1

Group	Self Expression		Task Attentiveness		Creativity		Respect for Peers	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Concrete	5.88	2.01	6.10	1.82	5.45	.93	6.39	1.93
Admixture	6.95	1.67	6.87	1.14	6.42	1.49	6.64	1.21
Abstract	7.55	.49	6.88	.29	7.00	.99	6.69	.44

Footnotes

1. This research project was part of a Title III, U. S. Office of Education Project, Jefferson County R-1 School District, Lakewood, Colorado, Project No. 67-04011-0, Project Director--Carolie Coates. O. J. Harvey's participation was made possible by an NIMH Research and Development Award, Number 5-K2-MH-28, 117-041, University of Colorado. B. Jack White's participation was supported by the Distinguished Visiting Educator Project, Kettering Foundation, Jefferson County R-1 School District, Lakewood, Colorado.

2. Jefferson County R-1 School District, Lakewood, Colorado.

3. Detailed comparisons between items in the present Teacher and Student Rating scales and those in earlier versions of these scales are available from tables deposited with the American Documentation Institute. Order Document No._____from ADI Auxiliary Publications Project, Photoduplication Service, Library of Congress, Washington, D. C. 20540. Remit in advance $_____for photocopies or $_____ for microfilm and make checks payable to: Chief, Photoduplication Service, Library of Congress.

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Table 1

Past and Present Factors from the Teacher Rating Scale

Present Study Factor Names and Items	Factor Loadings	1966 Study Factor Names and Loadings	1968 Study Factor Names and Loadings
Cluster I - Fosters Exploration		(Task Orientation)	(Resource-fulness)
Ingenuity	.94	.65	.71
Task effectiveness	.90	.77	
Utilization of standard resources	.89	.72	.77
Multiplicity of themes or approaches to problems	.86	*	.77
Teaching concepts	.85		
Encourage creativity and diversity	.83	*	.72
Involvement	.83		
Perceptiveness	.82	.88	***
Encourage individual responsibility	.79	*	
Enlistment of child participation	.78		
Enjoyment	.78		
Attention to the individual	.73		

continued

Table 1 (continued)

Cluster II - Dictatorialness			
Personal need for structure	.91	.97	.90
Rule orientation	.89	.89	.86
Allows free expression of feelings	-.86	-.86	-.84
Flexibility	-.85	-.91	-.90
Warmth	.78	**	***
Dictation of procedural detail	.78	.86	.81
Punitiveness	.76	.82	***
Fairness	-.75		
Nonfunctional explanation of rules	.70		

* Appeared in Dictatorialness cluster with negative factor loading of .71 or higher.

** Appeared in Task Orinetation in the 1966 article with factor loading of .89 or better in the appropriate direction.

*** Appeared in a separate three item cluster, Punitiveness, with factor loading of .77 or better in the appropriate direction.

Table 2

Past and Present Factors from the Student Rating Scale

Present Study		1968 Study
Factor Names and Items	Factor Loadings	Factor Names and Loadings
Cluster I - Self-expression		(Student Involvement)
Free expression of feeling	.82	.78
Fear attentiveness (insecurity)	-.82	-.66
Independence	.74	.76
Mechanistic adherance to rules	-.72	
Expression of preference in classroom activity	.71	.78
Cluster II - Task Attentiveness		(Cooperativeness)
Task attentiveness	.91	*
Cooperativeness with teacher	.88	.57
Adherance to spirit of rules	.88	.55
Child sustained activity	.85	.68
Voluntary participation in classroom activity	.85	*
Overall adherance to teacher's rules	.83	.86
Amount of relevant activity	.81	
Enthusiasm	.79	*
Passive hostility toward teacher	-.77	
Information seeking	.75	*
Diversity of goal relevant activity	.65	**
Amount of irrelevant activity	-.62	

continued

Table 2 (continued)

Cluster III - Creativity		(Achievement and Concreteness of Response)
Integration of facts	.89	.71***
Roteness-discreteness of answers	-.89	.88(reverse)
Reliance upon unintegrated facts	-.81	.71(reverse)
Novelty of response-answer	.78	-.56(reverse)
Appropriateness of response-answer	.72	.80***
Cluster IV - Respect for Peers		(Helpfulness)
Cooperativeness with classmates	.87	.71
Consideration toward classmates	.82	.79
Reciprocal affection	.80	
Amount of problem-oriented interaction	.75	

* Appeared in Cluster I - Self-expression (student involvement) with a factor loading of .66 or better in the appropriate direction.

** Appeared in a separate two-item cluster Activity level with loading of .81.

*** Items from Achievement cluster.